WHAT IS CLAIMED IS:

1. A method for microencapsulating a beaded material, said method comprising the steps of :
    a) providing a material enclosed within a bead to obtain a beaded material;
    b) covering the beaded material with a semi-permeable layer made of a polycation cross-linking derivative, to obtain a product; and
    c) covalently linking the beaded material to the semi-permeable layer.

2. The method of claim 1 comprising, after step b), a step of covering the product of step b) with a biocompatible layer; and wherein, in step c), said semi-permeable layer of the product of step b) is further covalently linked to said biocompatible layer.

3. The method of claim 1 comprising, prior to step b), a step of covalently linking a polycation to a photoactivatable cross-linking agent to obtain the polycation cross-linking derivative of step b), said photoactivatable cross-linking agent comprising :
    - a N-hydroxysuccinimide ester group; and
    - a phenyl azide group.

4. The method of claim 2, wherein step c) of covalently linking said beaded material to said semi-permeable layer or said step of covalently linking said semi-permeable layer of the product of step b) to both the beaded material and the biocompatible layer, is obtained by a step of exposing the polycation cross-linking derivative of the semi-permeable layer to a predetermined dose of light.

5. The method of claim 4, wherein the light is UVA light.

6. The method of claim 5, wherein the predetermined dose of light is at least about 2 kJ/m^2 and less than about 23 kJ/m^2.

7. The method of claim 2, wherein the bead and the biocompatible layer comprise a negatively-charged compound.

8. The method of claim 7, wherein the negatively-charged compound is a hydrogel.

9. The method of claim 8, wherein the hydrogel is alginate.

10. The method of claim 3, wherein the polycation is poly-L-lysine.

11. The method of claim 3, wherein the photoactivatable cross-linking agent is N-5-Azido-2-nitrobenzoyloxysuccinimide (ANB-NOS).

12. The method of claim 3, wherein the polycation is poly-L-lysine and the photoactivatable cross-linking agent is N-5-Azido-2-nitrobenzoyloxy-succinimide (ANB-NOS).

13. The method of claim 12, wherein the poly-L-lysine and the ANB-NOS are mixed together in a 1:20 ratio.

14. The method of claim 1, wherein said beaded material is beaded living cells.

15. The method of claim 14, wherein said living cells are insulin-producing cells.

16. The method of claim 15, wherein said insulin-producing cells are comprised in islets of Langherans.

17. A semi-permeable microcapsule comprising :

- a bead suited to enclose a material; and

- a semi-permeable layer covering the bead, said semi-permeable layer being made of a polycation cross-linking derivative covalently linked to the bead.

18. The microcapsule of claim 17, further comprising a biocompatible layer covering said semi-permeable layer, said biocompatible layer being covalently linked to the polycation cross-linking derivative of said semi-permeable layer.

19. The microcapsule of claim 17, wherein said polycation cross-linking derivative is a polycation covalently linked to a photoactivatable cross-linking agent, said agent comprising :

- a N-hydroxysuccinimide ester group ; and
- a phenyl azide group.

20. The microcapsule of claim 18, wherein the bead and the biocompatible layer comprise a negatively-charged compound.

21. The microcapsule of claim 20, wherein the compound is a hydrogel.

22. The microcapsule of claim 21, wherein the hydrogel is alginate.

23. The microcapsule of claim 19, wherein the polycation is poly-L-lysine.

24. The microcapsule of claim 19, wherein the photoactivatable cross-linking agent is N-5-Azido-2-nitrobenzoyloxysuccinimide (ANB-NOS).

25. The microcapsule of claim 19, wherein the polycation is poly-L-lysine and the photoactivatable cross-linking agent is N-5-Azido-2-nitrobenzoyloxy-succinimide (ANB-NOS).

26. The microcapsule of claim 25, wherein the poly-L-lysine and the ANB-NOS are in a 1:20 ratio.

27. The microcapsule of claim 17, wherein said microcapsule allows passage of molecules with a defined viscosity radius.

28. The microcapsule of claim 27, wherein said viscosity radius is equal or inferior to about 2.7nm.

29. The microcapsule of claim 17, wherein said material is living cells.

30. The microcapsule of claim 29, wherein said living cells are insulin-producing cells.

31. The microcapsule of claim 30, wherein said insulin-producing cells are comprised in islets of Langherans.

32. A pharmaceutical composition comprising:
- a plurality of semi-permeable microcapsules, each one being as defined in claim 17 and, each one of said microcapsules enclosing a material; and
- a pharmaceutically acceptable carrier.

33. The composition of claim 32, wherein said material is living cells.

34. The composition of claim 33, wherein said living cells are insulin-producing cells.

35. The composition of claim 34, wherein said insulin-producing cells are comprised in islets of Langherans.

36. A method for treating diabetes in a subject, said method comprising the step of:

- administering to said subject, an effective amount of the composition as defined in claim 32.